

Brivo CT325 Extending quality CARE to

more people





Needs addressed by Brivo CT325

- ✓ Fast, accurate diagnosis
- ✓ Excellent IQ at low dose, easy UI
- ✓ High patient throughput
- ✓ Reliable system, steady performance
- ✓ Low life cycle cost



4th generation dual slice CT



Brivo CT325 Extend the reach of CARE





- $\checkmark~$ The 4th GE dual slices generation
- Simplified daily operations thanks to latest ergo and tech innovations
- High care level with outstanding IQ & flexibility
- ✓ Most Compact CT available

0







2010 Gantry Design



Compact operating console



Spectral Calibration for Image Quality







Easy patient positioning table









Brivo CT325 Extending quality CARE to more people

Fast & Flexible

- 20 mm detector Dual Slice
- 0.6 mm* slice thickness
- 1 sec / rotation
- 30 mm coverage / sec





Excellent IQ & Low dose

- Excellent IQ
 - Adv. Recon. Algor.
 - Artifact and Noise Red.
- Hardware Solutions
 - Short Geometry
- Software Solutions
 - Auto mA, Beam Tracking
 - Dose Report





Ease of Use

- Easy user interface
- Easy patient positioning
- Streamline CT exam workflow
- Small Footprint (11.4 m²)



Reliable & Affordable

- High uptime and performance
- Strong return on investment
- Tube and generator optimized for long life cycle
- Remote connection support



Clinically driven technology Our technological answers



Proven Technology HiLightTM Detector

Build for Coverage and Resolution

Developed and manufactured by GE Healthcare 99% absorption efficiency

1416 cells in X-Y

20 mm sub-millimeter coverage

Sub millimeter slices

Up to 30 mm coverage per second







imagination at work

<u>GE Brivo CT325</u>	Other 2 slices
<u>2 x 0.6 mm*</u>	
<u>2 x 1 mm</u> <u>2 x 2 mm</u> <u>2 x 3 mm</u>	<u>2 x 1 mm</u> <u>2 x 1.5 mm</u> <u>2 x 2.5 mm</u> <u>2 x 4 mm</u>
<u>2 x 5 mm</u>	<u>2 x 5 mm</u>
<u>2 x 7 mm</u>	
<u>2 x 10 mm</u>	

Routine Chest





Low Dose High IQ

297 mm coverage 3.0 mm slice thickness Courtesy of Şifa Hospital Isparta, Turkey

DLP: 239 mGy - 4.1 mSv (EUR-16262 EN chest factor of 0.015 x DLP using a 32 cm phantom)



4.1 mSv



Volume Viewer











Volume Rendering / MPVR











Compare mode

Arterial phase



Dual phase liver review





Portal phase









Hi-Resolution CT Angio











Inner ear: Sub millimetric acquisition*





Proven Technology Tube/Generator Performances

Build for Efficiency & Image Quality

Short geometry 95 cm Focus to Detector distance

X-Ray tube

2 MHU with 500 kHU/min heat dissipation Focal Spot as small as 0.6 mm x 0.7 mm

Generator

24kW - 200 mA 120kV - 140 kV Up to 120*sec helical acquisition



*Option



Brivo CT325 Consistent performance

Reliable & Affordable

- Tube and generator engineered for consistent performance
- Performance and design engineered to overcome heavy patient loads.
- Remote connection troubleshoot Quick and accurate after sales solutions for nonstop service



"Steady performance, high throughput and uptime, Brivo CT325 is a reliable system to answer our CT needs."

> Ayşegül Erzinli - Radiology Technician Düztepe Yaşam Hospital, Gaziantep, Turkey

Proven Technology Efficient Reconstruction

Advanced algorithms

Advanced Artifact Reduction (AAR)

Reduces streak artifacts caused by arms, hips and shoulders in the scan beam

Advanced Noise Reduction (ANR)

Reduces noise without compromising spatial resolution

Reconstruction algorithms

Soft Tissue, Standard, Standard+, Detail, Chest, Bone, Edge and Performance









Proven Technology Spectral Calibration

Image uniformity Improvements

- For both center & off-center images
- Decreased beam harden artifacts
- Improved CT# uniformity in full SFOV
- Reduced calibration steps and exposures



Spectral calibration









OptiDose™ For Patient Care

AutomA 2D dose modulation

Automatically adjusts the mA to delivers the lowest dose scenarios

Personalize each scan and minimize dose Dose optimized up to 18% compared to fixed mA

Perfect X-Ray adjustment to slice thickness

Beam Tracking provides centering of the X-ray beam on the detector to minimize patient dose

Real-time focus stability









OptiDose™ For Patient Care

Bowtie filter

Automatically attenuates off-axis rays More uniform x-ray field at detectors Reduces x-ray scattering effects Minimized dose

Short geometry

The Brivo CT325 benefits from GE-exclusive short geometry, which improves X-ray efficiency. Dose optimized for all patients in all routine exams

Dose Report

Estimate CTDI, DLP display during scan prescription provides patient dose information enabling you to compute dose received during scan series





Projected series DLP :

Accumulated exam DLP :

991.87

D.00

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Ε/

Brivo CT325 Low Dose CT

Excellent IQ @ Low Dose

- Short geometry: 95 cm focus-detector distance
- 10-200 mA with AutomA dose modulation
- Improved SNR (Signal to Noise Ratio)
- **Optidose**[™] techniques and beam tracking
- Excellent Image Quality
 - AAR: Streak Artifact Reduction Algorithm
 - ANR: Noise Reduction Algorithm



"Thanks to the short geometry design, we are able to execute CT scans with excellent IQ at low dose."

Dr. Serhat Tulukcu - Radiology Doctor Çankaya Doruk Hospital, Ankara, Turkey

New gantry 2010 Design

Optimized ergonomics

More convenient

More compact





New ergonomics Easy operations

- **Optimized panel control**
- Accessible from both left or right side
- Accessible for operators of any sizes









Convenient Easy patient position

New Fixed Table

Horizontal move range 1520 mm

Horizontal scan range 1200 mm

Scan large patients (180kg)







Easy & Streamlined Workflow

New Table & Gantry

Easy patient positioning & releasing

Allows user to choose +-30 degree tilt

Improves workflow by allowing user to quickly finish CT exams

No tilt configuration on PC, less clicks







25 / GE /



Brivo CT325 Simple and Easy To Use

Ease of Use

- Easy patient positioning and releasing: Increased patient comfort. Less scan time.
- Efficient workflow: Streamlines CT exam workflow within few steps. Easy UI for fast operations.
- Simplifying management of multiple tasks: Combines both image acquisition and postprocessing with advanced applications from a single location.



"Technical capabilities are superior. With easy UI and easy patient positioning, I am confident to say that Brivo CT325 is the product to choose."

Radiology Doctor – Dr. Mustafa Demiroğlu Bayındır Hospital, Gaziantep, Turkey

Brivo CT325 vs. Siemens Spirit 2) Gantry Tilt

Siemens will say	GE will answer
No physical gantry tilt	All spine and brain examinations can be scanned with remote Digital Tilt of +/- 30 degrees
Digital Tilt not 'real' / not effective	Super-premium segment of all competition products have digital tilt → superior technology



Digital Tilt Overview



Customized for Value CT

Reliability Improvement

- •Less mech. wear out, less safety concern
- •Less tilt Centrifugal force harm to Tube

Clinical Benefit

- •Accurate Localization, reduce mech. error
- •Stepless angle, wider tilt range
- •Helical tilt for dual slices
- •Variable thickness post reconstruction
- Providing more info. With 0 degree images

Easy of Use

•Simplified workflow ... Let scanner do most



Saving on Exam Time



e su o

>20% time saving on Routine Head exam

~30% time saving on Lumbar Spine exam



User case I: Routine head exam

Conventional CT workflow, w/remote tilt option

START

23"	30"	7‴	25"	20"	10"	2	20″	23″
ratient Setup Privo CT wor	Patient info and protocol selection	Scout	: Set up scan parameters. Localizers	Tilt	Scan	Tilt	15 c) m (v	Release Patient 58s w/ onventional nechanical tilt v/ remote tilt)
FART						END		
11"	30″	7‴	25″	38″		10"	Sa	ues 37 sec s
Patient Setup	Patient info and protocol selection	Scout	Set up scan parameters. Localizers	Digital tilt & Scan		Release Patient	12 di	:1s w/ gital tilt

User case II: Lumbar spine exam

Conventional CT workflow, w/ remote tilt option

23″	30"	7"	25"	20"	8″	- 49	8"	6″	8″	10"	23″
Patient Setup	Patient info and protocol selection	Scout	Set up scan parameters, Localizers	Tilt	Scan	Tilt	Scan	Tilt	Scan	τitt 170s u conve mech (w/re	Release Patient v/ ntional anical tilt mote tilt)
ART	01111000						END				
11"	30″	7"	25"	4	0"		10"			Saves	47 sec s
Patient	Patient info and protocol	Scout	Set up scan parameters,	Digital tilt (à Scan	Re Po	elease itient			123s w digital	i/ tilt

Brain without digital tilt









Very nice white & grey matter differentiation

134 mm coverage with 2.0 mm slice thickness

Courtesy of Yenişehir State Hospital, Kahramanmaraş, Turkey

DLP: 810 mGy - 1.9 mSv

(EUR-16262 EN head factor of 0.0023 x DLP using a 16 cm phantom)

Brain with DIGITAL TILT





Very good soft tissue differentiation Reduced beam hardening artifacts in posterior fossa

163 mm coverage with 2.0 mm slice thickness Courtesy of Yenişehir State Hospital, Kahramanmaraş, Turkey

DLP: 740 mGy - 1.7 mSv (EUR-16262 EN head factor of 0.0023 x DLP using a 16 cm phantom)

Digital tilt – Lumbar spine

















Brivo CT325 vs. Siemens Spirit 4) Compact 2 slice





Siemens will say	GE will answer
Spirit is the most compact 2 slice CT with 16 squaremeters of space needed	CT325 can be installed in a room smaller than 12 squaremeters



Compact More freedom



Compact design only requests 11.4m² as a minimum requirements for scan room

One of the smallest footprint in the world





New Operator console

Compact console design

Only requests **4.4m²** as minimum requirements of operating room Integrated Console: Data handling, filming and post processing in one place

Brivo desk or Freedom workspace

Practical Operator's desk with all necessary accessories Scan control keyboard including intercom speaker, microphone and volume controls

Powerful

Central Processor : Intel Core2 Duo CPU (2.83 GHz) Main Memory : 4 GB DDR2 Graphics Card : Nvidia FX570 Hard disk : 320 GB **Linux Operating System**





Brivo CT325

GE Healthcare... 4th generation of Dual Slice

Siemens... \downarrow Detector size 10% \uparrow footprint

Philips... Long Geometry Philips.. Or Neusoft??

Neusoft... Engineered or staged?



Brivo CT325 Competitive landscape



For what Brivo CT325 is made?



GE - Siemens - Neusoft

	GE	Siemens	Neusoft
Aperture	65cm	70cm	70cm
Focal to detector	949mm	950mm	1318mm
Coverage	20mm	10mm	20mm
Scannable range	120cm	145cm	104cm
Console	Fully integrated	+workstation	+workstation
Pediatric protocols	Included	Included	Option
Reconstruction speed	2fps	1fps	1fps
Slice thickness	0.6mm	1mm	0.8mm
Max kV / Max mA	140kV / 200mA	130kV / 180mA	140kV / 200mA
Available applications	4 standard + 5 optional	3 standard + 5 optional	5 standard + 2 optional
Host PC	Linux/ 5.66GHz/4GB+640GB/ CD-DVD	Windows/ 5.32GHz/2GB+146G B/CD	Windows/ 5.32GHz/2GB+160GB/ CD
GE imagination at work 1 at work	The best com	bination	39, GE,

The Spec game

	Brivo CT325	Siemens Spirit	Phillip MX4000D	Phillip MX6000D	eusoft Neuviz C3000 Du
Gantry					
Bore Size	65cm	70cm	70cm	70cm	70cm
Tilt Angle	digital tilt 30°	gantry tilt 25° (30° option)	gantry tilt 30°	gantry tilt 25°	gantry tilt 30°
Focal to Detector Distance	99cm	97cm	131cm	104 cm	118
max SFOV	43cm	50cm	50cm		50~500mm
min rotation time/ 360 degrees (s)	1 (option), 1.5, 2, 3, 5	0.8s (option), 1s	0.8s (option), 1s		
Detector					
Material	Hilight matrix	UFC	GOS (Gadolinium oxysulphide)	GOS (Gadolinium oxysulphide)	GOS (Gadolinium oxysulphide)
Detector Coverage	20mm	10mm	20mm	20mm	
Detector Channels	X-Y 1416	X-Y 1344	X-Y 1456		1440
X-ray Tube/Generator					philips
Heat storage capacity	2 MHU	2 MHU	2.5 MHU	4.0 MHU	2.5 MHU, 4.0 MHU
Heat dissipation (anode)	500 KHU/min	500 KHU/min	530 KHU/min		840 kHU/min
Focal spot size (mm x mm) (IEC)	0.7x0.6	0.8x0.4; 0.8x0.7	0.4×0.7 / 0.6x1.3		0.4×0.7 / 0.6×1.3
Flying/dynamic focal spot					
Max generator Power	24 kW	26 kW	28 kW	28 kW	28 kW, 42 kW
Patient Table					
Scannable Range	120cm	145cm	150cm	150cm	104cm, 130cm
Elevation Range	No	45-83cm	43-97mm	43-97mm	
Minimum space requirement (m²)	11.4m²	14.8	18.6	18.6	18.6
Scan Performance					
Scan Mode	Helical	Helical	Helical	Helical	Helical
MaxmA	200 mA	180 mA	200 mA	300 mA	30-200 mA, 10-300 mA
Max KV	140 kV	130 kV	140 kV	140 kVP	140 kV
	2x0.6 (option)				
	2x1		2 x 0.8 (option)		2 x 0.8
	2x2	2x1	2X1		2X1
Slice Thickness	2x3	2x1.5	2X2.5		2X2.5
	2X5	2X2.5	2X5	2x0 8 (antianal)	2X5
	2x7 2x10	2x4	2X10	2x0.0 (optional) 2x1	2×7
Recon Speed	2fns	1fps	1fns	1.5s (0.9s option)	0.8s/image
Rotation time, 360 degrees	1s option? (0.6s option?)	1s(0.8s option)	15	1s (0.8s option)	0.85
Spatial Resolution	13.3 lp/cm	15 lp/cm	15 lp/cm	15 lp/cm	15 lp/cm @ 0% MTF
	With 20 cm CATPHAN:	with 20 cm CATPHAN:	io prom	io prom	
	3mm @ 0.3%	5mm @ 0.5%			
	30 mGy	13.7 mGy			
	with 16 cm CATPHAN:	With 16 cm CATPHAN:			
Level a set set state of a 1994 of the	5mm @ 0.3%	3mm @ 0.5%			
Low contrast detectability / low contr	9.57 mGy	17.9 mGy	3.0mm @ 0.5% (21.6 cm)	3.0mm @ 0.5%	3.0mm @ 0.5%
IVIAX nelical acquisition scan time	<u>30sec (60, 90, 120sec-80mA)</u>	60sec	80s	80s	80, 100s
Available bitch	0.75 : 1.5	0.5 : 2.0	0.5 : 2.0	1	0.5 : 2.0

40 / GE /

Brivo CT325 v.s. Siemens Spirit











Brivo CT325 vs. Siemens Spirit 1) Detector Coverage

Siemens will say	GE will answer
Spirit is a 2 slice with 70 cm gantry opening and 50 cm FOV. It can perform all routine examinations	What about routine thorax scans?





NO submilli for Siemens Only 10mm wide detector

<u>GE Brivo CT325</u>	<u>Siemens Spirit</u>
2 x 0.6 mm*	
2 x 1 mm 2 x 2 mm 2 x 3 mm 2 x 3 mm 2 x 5 mm 2 x 7 mm 2 x 10 mm	2 x 1 mm 2 x 1.5 mm 2 x 2.5 mm 2 x 4 mm 2 x 5 mm

Brivo CT325 Clinical Impact (20 mm vs. 10 mm)

- 1. Breath-hold time
- 2. Exam lead time

Assumption: A full chest exam ~ 30 cm

Brivo CT325

2x10 mm detector ~10 sec exam lead time (Pitch 1.5:1 with 1 sec rotation speed)

Other 2 Slices

Maximum 2x5 mm detector with 1.5:1 pitch 1 sec rotation speed ~ 20 sec exam lead time 0.8 sec rotation speed ~ 16 sec exam lead time



Brivo CT325 v.s. Siemens Spirit

Generator 26 kW 26 kW or 180 mA. – Brivo 24Kw but 200 mA

145 cm Scannable range (Pure Specs game)

With 60 seconds acquisition and a max pitch of 2.0:1, the maximum coverage possible with 2 x 5 mm (20 mm/sec) is 120 cm with 1 second acquisition On top the Topogram or Scout View is limited to 102 cm

70 cm gantry aperture & gantry tilt +/- 25 degrees

Sub second Acquisition 0.8 sec (Option) Pure specs game : 0.8 x 180 mA = 144 mAs (Brivo 200 mAs)



Brivo CT325 v.s. Siemens Spirit

What Siemens usually forgets

Image reconstruction at 1 image/second Brivo CT325 reconstruction time is 2 images per second

Image Quality specification

LCD Somatom Spirit : 5 mm @ 0.3% at 13.7 mGy @ 90 mAs (20cm CATPHAN) LCD Brivo CT325 : 5 mm @ 0.3% at 9 mGy @ 80 mAs (20cm CATPHAN) so 35 % less dose

Spatial Resolution Somatom spirit : 15.5lp/cm @0%MTF, 60mAS Spatial Resolution Brivo CT325 : 13.3 lp/cm @ 0% MTF, 20mAS



Applications

MPR

CT angiography

SSD

VR*

VE*

Dental*

Orthopedic*









Excellent imaging of enlarged galibladder.

Sharpness and detail, Illustrated



Su



Detailed gray-white matter differentiation.





Spirit	Brivo CT325
Multi-Planar-Reconstruction	Multi-Planar-Reconstruction (MIP/MinIP)
Surface shaded display	Surface shaded display
Volume Rendering	Volume Rendering
CT-Angiography	Vessel analysis
Virtual Endoscopy	Virtual Endoscopy
	Smart prep
Brain perfusion	CT perfusion
Dental CT	DentaScan
	CT-colonography
Orthopedic	

Footprint – 10% space saving v.s. Spirit

GE Brivo CT325





Minimum requirement: Width: 2500mm, Length: 4555mm Scan room = $11.39m^2$



Minimum requirement: Width: 3000mm, Length: 4214mm Scan room = $12.64m^2$



Brivo CT325 v.s. Philips MX series CT





Philips' Perf./Value CT story

- 1997 Released Aura CT based on the technology from Hitachi
- 1998 Released MX8000 Based on the technology fror Marconi
- Finished the evolution from *Elcint* to *Picker* to *Marconi* to *Philips*
- 2002 MX8000 IDT Philips' first 16slice
- 2003 Started Brilliance CT series
- 2005 Leverage the join venture in China Neusoft, Released MX4000D/6000D CT



GE's short geometry v.s. Philips' high specs



X-Ray Intensity (I) reaches detector is roughly in inverse proportion to square of the distance from focus to detector.



Brivo CT325's x-ray utilization with short geometry design is 1.88 times efficient than Philips MX series's long geometry design.

This compensate Philips MX series paper specifications.



Philips' dual slice CTs are from Neusoft - Same

*Optional	NeuViz Dual (Type 2528)	NeuViz Dual (Type 4042)	Philips MX4000D	Philips MX6000D
Detector elements	720/row	720/row	720/row	720/row
Tube	2.5MHU	4.0MHU	2.5MHU	4.0MHU
Generator power	28KW	42KW	28KW	42KW
Scan time	1.05/0.85*	1.05/0.85*	1.05/0.85*?	1.05/0.85*
Recon Speed	1.55	1.05	1.55	1.05/0.95*
Slice thickness	1mm, 2.5mm, 5mm, 7mm, 10mm/0.8*	1mm, 2.5mm, 5mm, 7mm, 10mm /0.8*	1mm, 2.5mm, 5mm, 7mm, 10mm /0.8*	1mm, 2.5mm, 5mm, 7mm, 10mm /0.8*
Operating system	Windows	Windows	Windows	Windows
resolution	15lp/CM 3mm@0.5%	15lp/CM 3mm@0.5%	15lp/CM 3mm@0.5%	15lp/CM 3mm@0.5%



Applications

MPR

MIP/minIP

SSD

VR

VE*

Bone mineral analysis*

MX400	Brivo CT325
Multi-Planar-Reconstruction	Multi-Planar-Reconstruction (MIP/MinIP)
Surface shaded display	Surface shaded display
Volume Rendering	Volume Rendering
	Vessel analysis
Virtual Endoscopy	Virtual Endoscopy
	Smart prep
	CT perfusion
	DentaScan
	CT-colonography
Bone mineral analysis	





MPR- Multiplanar Reformation Maximum or Minimum Intensity Projection (MIP)





3-D SSD Reconstruction

Volume Rendering





Bone Mineral Analysis

Virtual Endoscopy

GE /

Brivo CT325 v.s. Neusoft NeuViz Dual







NEUSOFT Product offering

We provide hospitals of all levels with over different 50 models of digital medical imaging systems. Categorized in 10 series they are including CT- and MRI- scanner, digital X-ray as wells as diagnosis ultrasound systems. In addition, we have also delivered comprehensive, patient-centered e-hospital solutions, including HIS, CIS, LIS, EMR, PACS, RIS, CAD, and remote diagnosis

http://medical.neusoft.com/en/



NEUSOFT CT Product offering



NeuViz Single Slice CT Scanner System



NeuViz Dual-Slice CT Scanner System



NeuViz 16 Multi-Slice CT Scanner System



Same product as PHILIPS MX4000 & MX6000



NEUSOFT CT Clinical offering



UroCARE "Basic Volume Viewer like"



LungCAD "LungVCAR like"

Image: second second

CardioCARE "CardIQ Express like"

Advertised in USA : Rich imaging techniques including 3D SSD, MPR, CT Angiography, Virtual Endoscopy, Perfusion, Advanced vessel analysis, Coronary Analysis, Brain Perfusion, Calcium Scoring , and CTC/VC NEW GI Applications: CT Colonography/ Virtual Colonoscopy Advanced Colonmetrix by Barco

OsteoCARE BMD

Neuviz Neusoft has less advanced applications

They have same applications but Brivo has Dental Scanning & CT perfusion included and not as options

Neuviz	Brivo CT325
Multi-Planar-Reconstruction (MIP/MinIP)	Multi-Planar-Reconstruction (MIP/MinIP)
Surface shaded display	Surface shaded display
Volume Rendering	Volume Rendering
CT-Angiography	Vessel analysis
Virtual Endoscopy	Virtual Endoscopy
Bolus timing	Smart prep
Brain perfusion	CT perfusion
Dental CT	DentaScan
Bolus Tracking	Smart prep
	CT-colonography





Applications

MPR

MIP/minIP

SSD

VR

CT angiography

VE

Brain perfusion*

Dental CT*

Bolus timing / tracking*

GE imagination at work 1 at work



















NEUSOFT NeuViz Dual Slice

2 Configurations Basic ~ HS Dual/Brivo CT325 Advanced ~ Former NX/i

> Scan time Max. Continuous scanning time Max. Continuous scanning length Pitch Slice thickness Detector Gantry tilt angle Gantry aperture FOV Tube heat storage capacity X-ray generator Tube voltage Tube current Image reconstruction time

0.8, 1, 2, 3, and 4 sec. 80, 100 sec. 1040mm, **1300mm** 0.5:1~2.0:1 2 x 0.8mm, 1, 2.5, 5, 7, and 10mm 2 x 720 channels, GOS solid state $+30^{\circ}$ 700mm 50~**500mm** 2.5MHU, **4.0MHU** 28KW, **42KW** 80, 100, 120, and 140KV 30-200mA, 10-300mA Sub Second



Behind the high paper specifications



Its key components in imagingchain are from multiple companies

- Tube: Varian
- Slip-ring: Litton
- Generator: Spellman
- Detector: Hamamatsu

Let the clinical images tell the difference...



Needs addressed by Brivo CT325

- ✓ Fast, accurate diagnosis
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4th generation dual slice CT



